

WHAT IS CLAIMED IS:

1. A power supply having a first operation mode and a second operation mode, comprising:

a main circuit having at least one output port for converting an input voltage into an output voltage at said output port;

a first control circuit for controlling said main circuit under said first operation mode;

a second control circuit for controlling said main circuit in a burst mode control when said power supply operates under said second operation mode; and

a switching controller processing a control signal to control said first control circuit and said second control circuit to one of said first operation mode and said second operation mode in response to a load status of said output port.

2. The power supply of claim 1, wherein said first control circuit further comprises:

a first controller; and

an error amplifier serially connected between one end of said first controller and said output port.

3. The power supply of claim 1, wherein said second control circuit further comprises:

a second controller; and

a voltage hysteretic comparator serially connected between one end of said second controller and said output port.

4. The power supply of claim 3, wherein said second controller is enabled when said output voltage decreases to a low threshold of said voltage hysteretic comparator and an output voltage of said voltage hysteretic comparator is a first threshold, and said second controller is disabled when said output voltage increases to a high threshold of said voltage hysteretic comparator, and an output voltage of said voltage hysteretic comparator is a second threshold.
5. The power supply of claim 3, wherein said switching controller is a loading hysteretic comparator which senses said load status in which when said load decreases to a low threshold of said loading hysteretic comparator, said loading hysteretic comparator generates a first signal to disable said first controller and enable said second controller, and when said load increases to a high threshold of said loading hysteretic comparator, said loading hysteretic comparator generates a second signal to enable said first controller and disable said second controller.
6. The power supply of claim 1, wherein said first operation mode is a normal operation mode.
7. The power supply of claim 1, wherein said second operation mode is a standby operation mode.
8. The power supply of claim 1, wherein said load status is determined by one of an output current and an output voltage at said output port.
9. A control method for a power supply having a first operation mode and a second operation mode, comprising steps of:
 - providing a main circuit having at least one output port for

converting an input voltage into an output voltage at said output port;
providing a first control circuit for controlling said main circuit under said first operation mode;
providing a second control circuit for controlling said main circuit in a burst mode control when said power supply operates under said second operation mode; and

processing a control signal to control said first control circuit and said second control circuit under one of said first operation mode and said second operation mode in response to a load status of said output port.

10. The control method of claim 9, wherein said control method further comprises steps of:

enabling said second control circuit when said output voltage decreases to a low threshold of a voltage hysteretic comparator, and an output voltage of said voltage hysteretic comparator is a first threshold; and

disabling said second control circuit when said output voltage increases to a high threshold of said voltage hysteretic comparator, and an output voltage of said voltage hysteretic comparator is a second threshold.

11. The control method of claim 9, wherein said control method further comprises steps of:

disabling said first controller and enabling said second controller when said load decreases to a low threshold of a loading hysteretic

comparator; and

enabling said first controller and disabling said second controller when said load increases to a high threshold of said loading hysteretic comparator.

12. The control method of claim 9, wherein said load status is determined by an output current at said output port.

13. The control method of claim 9, wherein said load status is determined by an output voltage at said output port.

14. A power supply having a first operation mode and a second operation mode, comprising:

a main circuit having at least one output port for converting an input voltage into an output voltage at said output port;

a voltage control oscillator for providing an operation frequency to operate said main circuit;

a driver for driving said main circuit with said operation frequency;

a controller processing a control signal to control said voltage control oscillator so as to operate said main circuit under one of said first operation mode and said second operation mode in response to a load status of said output port; and

a standby circuit for enabling said driver to control said main circuit in burst mode control when said power supply operates under said second operation mode, wherein when an output voltage of said power supply decreases to a low threshold value, said standby circuit

enables said driver and said output voltage increases, and when said output voltage increases to a high threshold value, said standby circuit stops the operation of said driver and said output voltage decreases.

15. A power supply having a first operation mode and a second operation mode, comprising:

a main circuit having at least one output port for converting an input voltage into an output voltage at said output port;

a pulse width modulator for providing a pulse width modulation signal to operate said main circuit;

a driver for driving said main circuit with said pulse width modulation signal;

a controller processing a control signal to control said pulse width modulator so as to operate said main circuit under one of said first operation mode and said second operation mode in response to a load status of said output port; and

a standby circuit for enabling said pulse width modulator to control said main circuit in burst mode control when said power supply operates under said second operation mode,

wherein when an output voltage of said power supply decreases to a low threshold value, said standby circuit enables said driver and said output voltage increases, and when said output voltage increases to a high threshold value, said standby circuit stops the operation of said driver and said output voltage decreases.